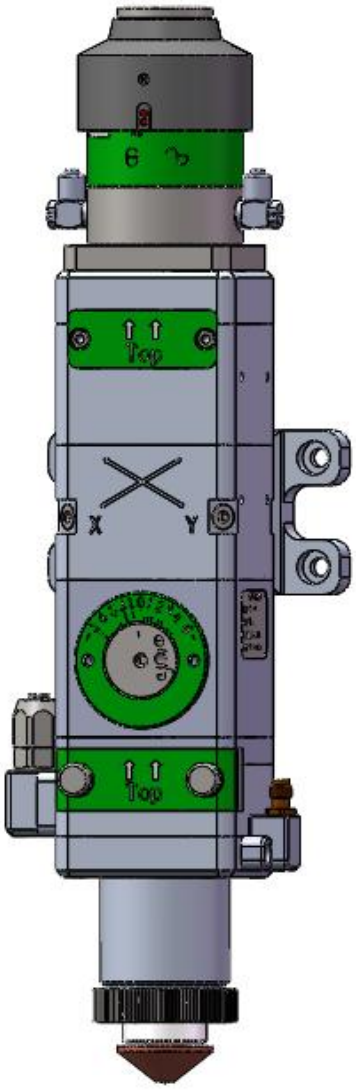
Shenzhen RelFar Intelligent Technology Co., Ltd.

FCP20-H10 Cutting Head of Manual Focusing



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Foreword

Thank you for choosing our products!

To enable you to have an overall understanding of our company, there is a detailed introduction regarding features, structural features, technical parameters, instructions for use and maintenance of the product in the Manual. Before using this product, please read this Manual carefully, which will help you to use it better.

Due to constant update of product functions, the product you received may differ from the description in the Manual. We hereby express our deep sorry for this matter! During use, in case of any question, please timely call us for consultation, and we will offer dedicated service to you wholeheartedly.

Contents

Chapter I Overview

1.1 Product parameter

Fiber interface	QBH
Wavelength scope	1,k070±20nm
Rated power	≦2,000W
Collimation focal length	100mm
Focus focal length	125mm/150mm
Regulating scope of focal point	±5mm
Auxiliary gas pressure	≤25Bar
Effective clear aperture	28mm
Weight	2.4KG

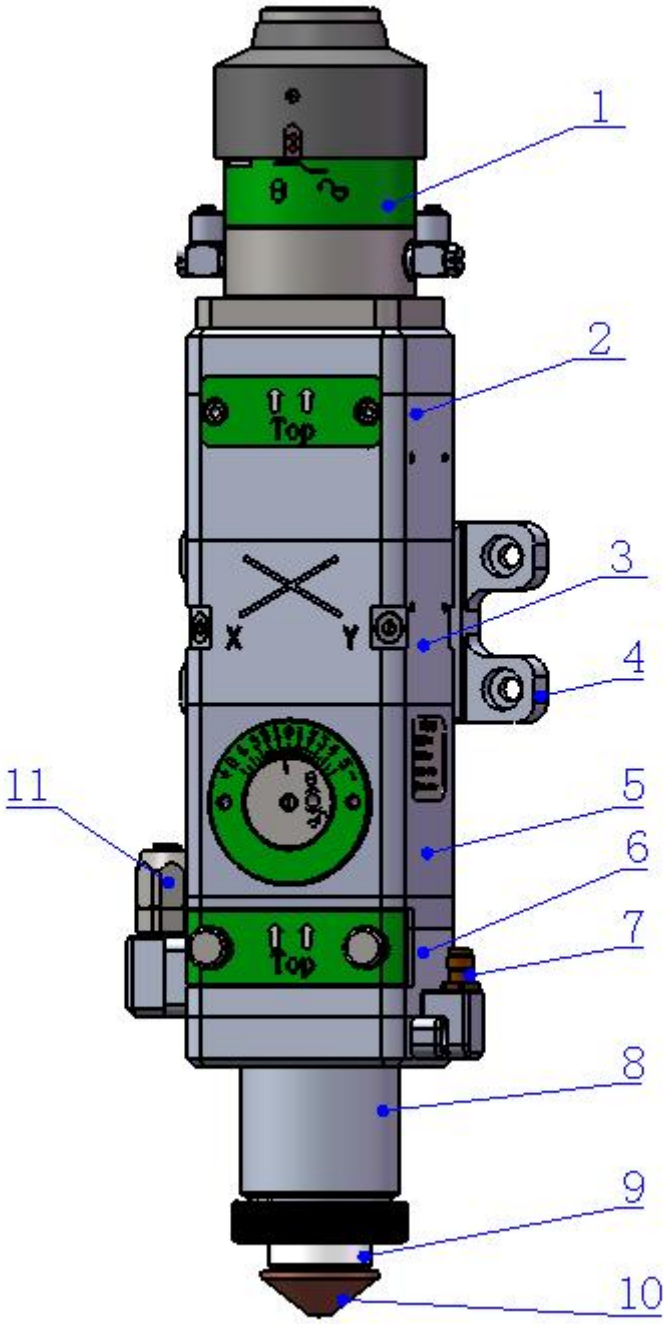
1.2 Precautions

※ To ensure personal safety, wear the special fiber laser protective glasses before operation.

※ It is necessary to keep the product clean and prevent the cooling liquid, condensate water or other foreign matter from intruding into the cavity, or the functional contamination and functional impact of related parts will be incurred.

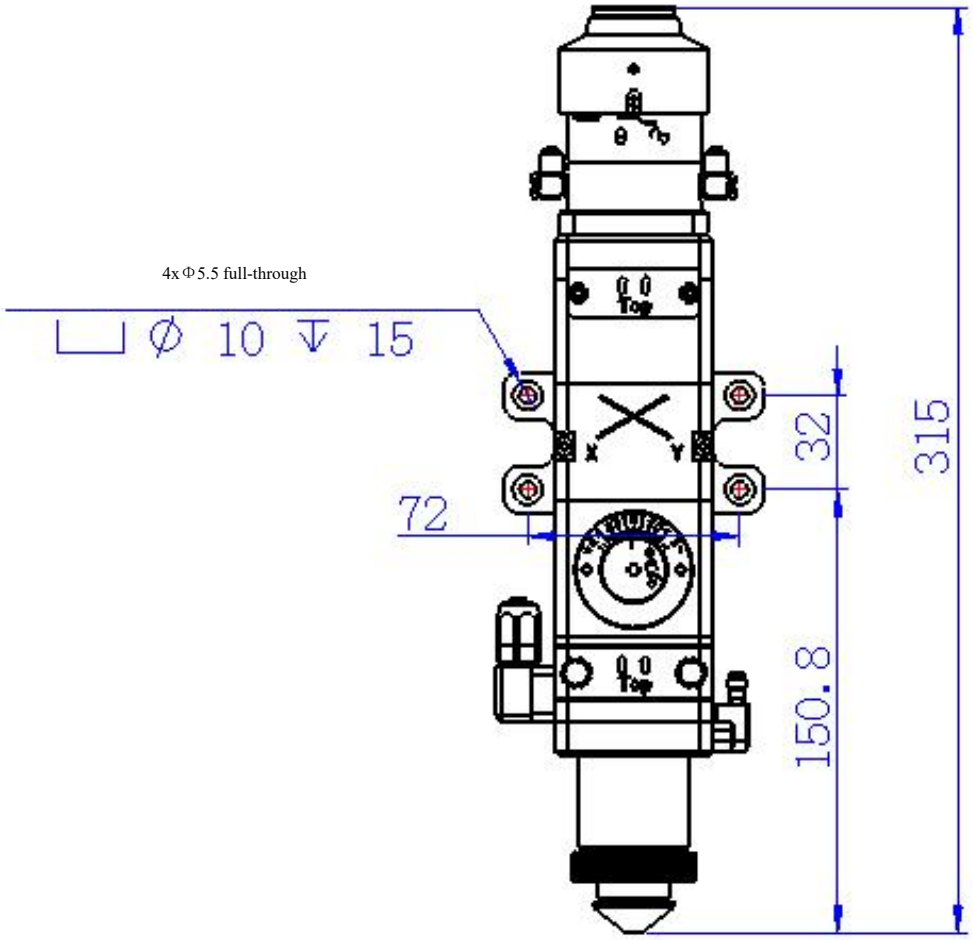
Chapter II Structural Characteristics

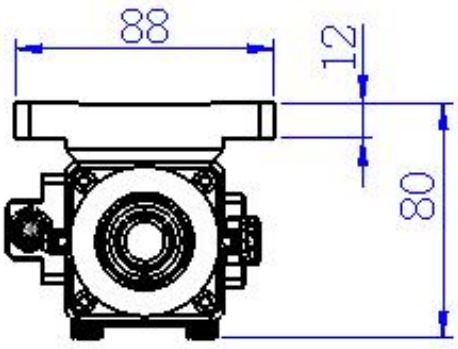
2.1 Product structure



Module	
1	QBH interface
2	Collimation protection module
3	Collimation lens module
4	Installation of fixed plate
5	Focus lens module
6	Focus protection module
7	Amplifier interface
8	Sensor base
9	Ceramic body
10	Nozzle
11	Air pipe port

2.2 Installation dimension

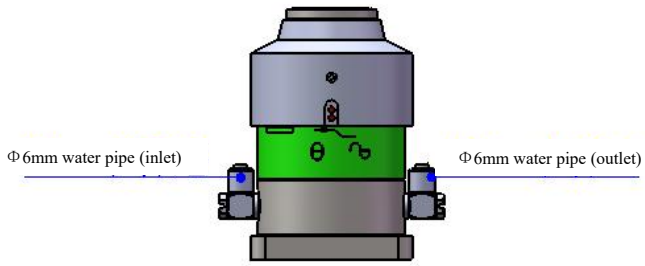




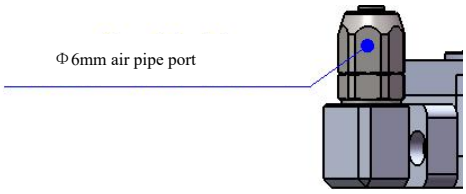
Chapter III Product Installation

3.1 Pipe connection

Cooling water connection



Air port



Connection of cooling water and cutting gas and usage requirements:

Notes: Regularly used gases: Compressed air (oil-water filtration required)

Regularly used gases are: argon, nitrogen, compressed air and oxygen (oil-water filtration required).

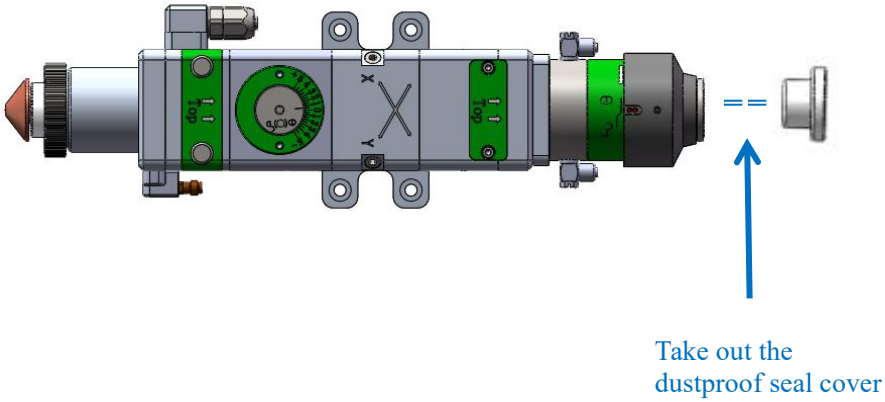
3.1.1 Cooling water: The 6mm air tube is connected. The main function is that the excess heat is taken away by cooling through the internal structural member water route when the heat is produced by the light path in the cavity to ensure the cutting performance. The series connection of cooling water

pipeline is required, with one-in and one-out water circulation connected.

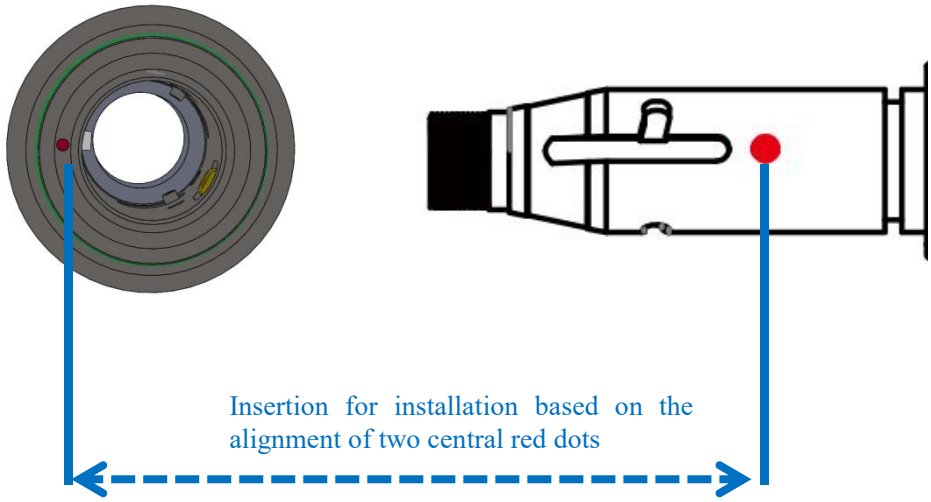
3.1.2 Cutting gas: Connect to a 8mm gas pipe to assist in cutting products, and the gas pressure output is ≤25Bar.

3.2 Optical fiber input installation

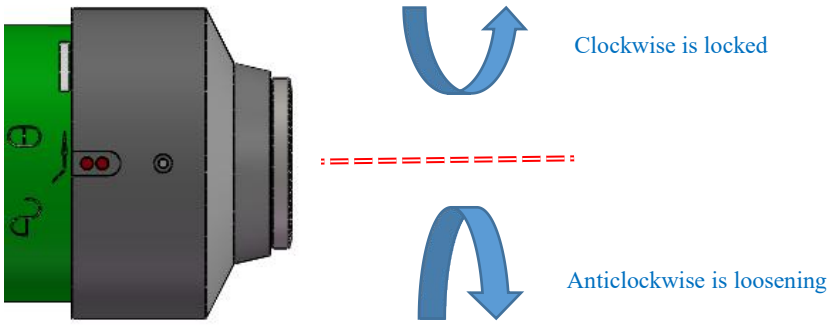
※ The QBH is a horizontal arrangement to take out the dustproof seal cover.



※ Align the red dot on the fiber optic head with the QBH red dot, and slowly insert the fiber optic head into the QBH.



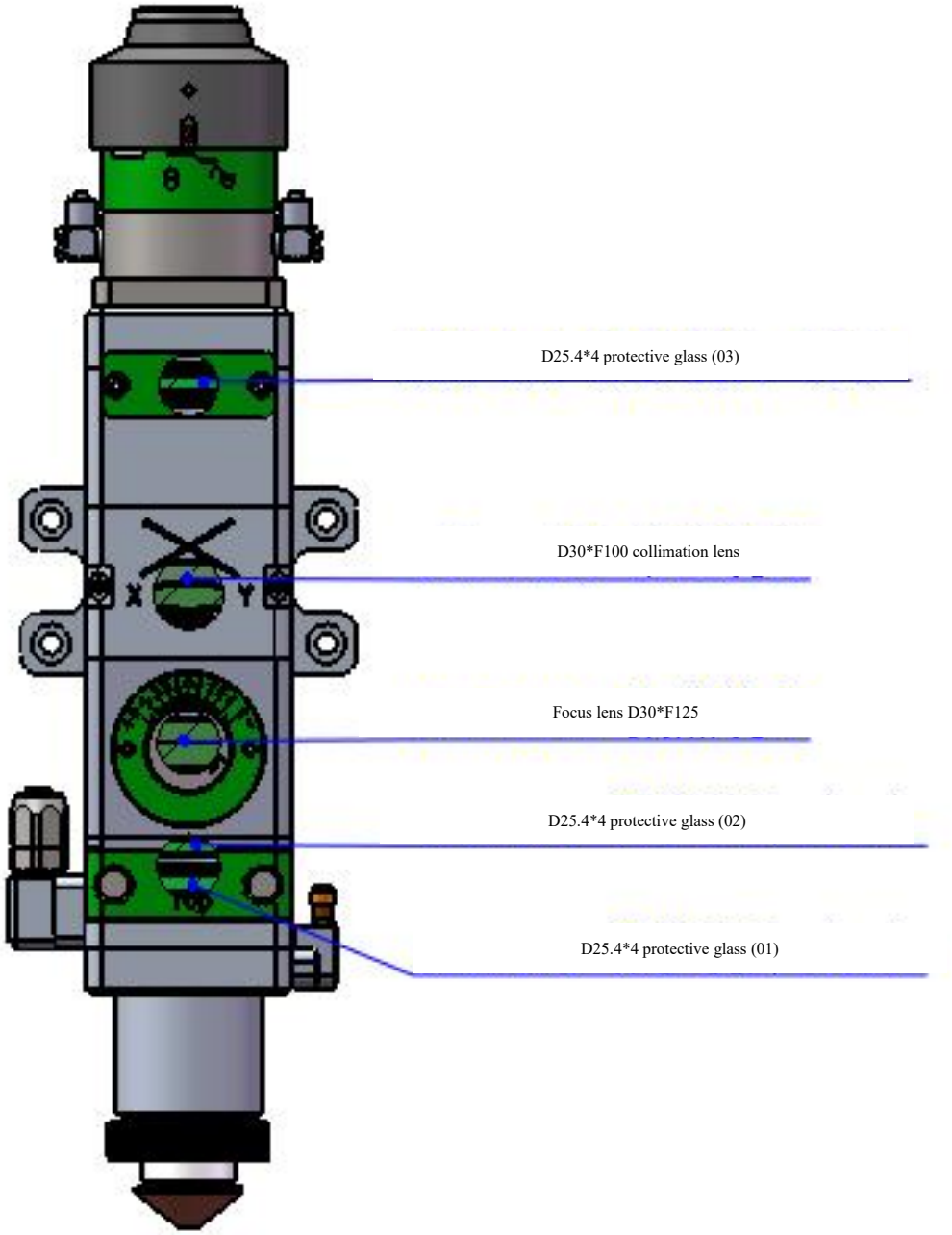
※ The QHB is screwed to the locking state: Rotate it to the limiting position clockwise (hearing the "click"), lift up the rotating mantle, and clockwise rotate the mantle until the head of optical fiber is compressed.



Chapter IV Maintenance

4.1 Structure of optics lens

※ The assembly is completed in the dust-free plant at the time of replacement of parts. In principle, other modules are forbidden to be dismounted except that the protective glass drawer can be disassembled and assembled. If it is necessary to check the collimation lens and focus lens, the product shall be put into a clean environment for disassembly.

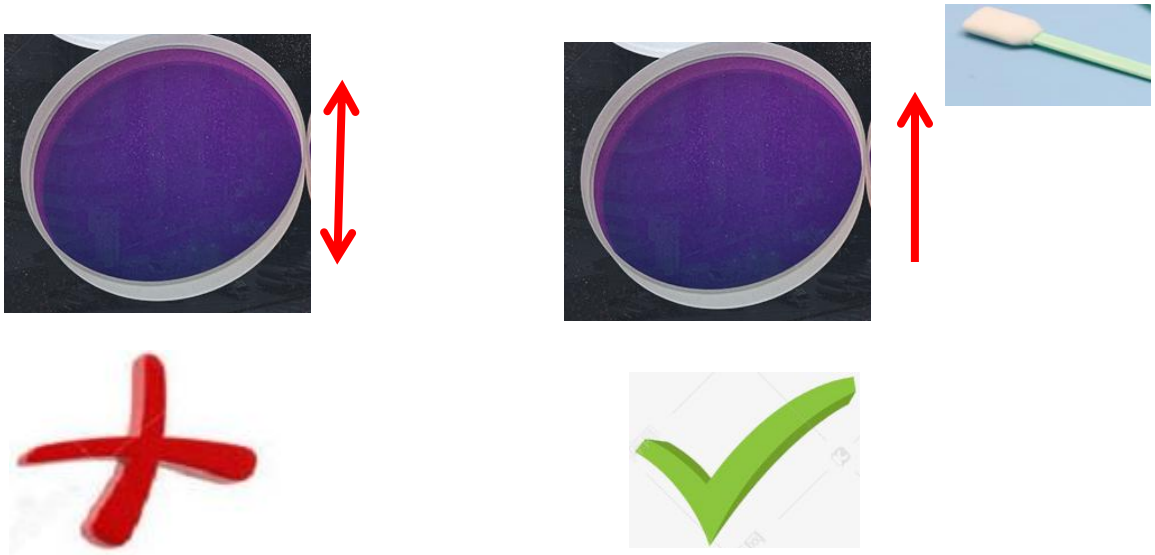


4.2 Cleaning of optics lens

※ When the optics lens are cleaned, the operation method and attention points are as follows:

※ Tools: Dust-free gloves or dust-free fingerstall, dust-free wiping cotton swab, isopropyl alcohol, and caned dry and pure compressed air.

※ Spray the isopropyl alcohol onto the dust-free cotton swab, align the lens to eyes, gently pinch the side edge of the lens with left thumb and index finger and hold the dust-free cotton swab with right hand to gently wipe the front and back of the lens in a single direction from bottom to top or from left to right (avoid wiping back and forth to avert the secondary contamination of lens), blow the surface of the lens with filling dry and pure compressed air and confirm the surface of lens is free from foreign matters after cleaning.



4.3 Disassembly and assembly of optics lens

4.3.1 Disassembly and assembly of collimation lens

Tools: 3mm hexagon key wrench, special fixture wrench, dust-free cotton swab and alcohol

※ The disassembly and assembly shall be completed in a clean place. When the lens are dismounted, the dust-free gloves or dust-free fingerstall.

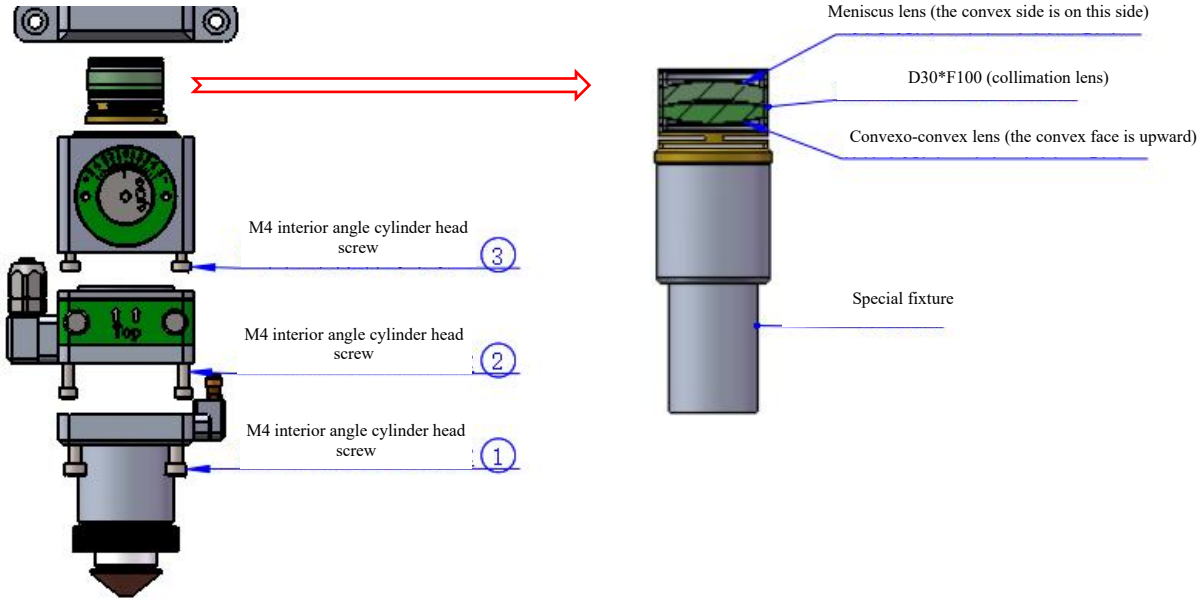
※ Disassembly and assembly steps:

Step I: Clean up all the dust on the surface of the laser head firstly.

Step II: Loosen M4 screws in 1, 2 and 3 in sequence with a 3mm hex wrench.

Step III: Take out the component module and seal the upper and lower port with textured paper to prevent the dust from entering the cavity.

Step IV: Use the special disassembly lens cone fixture to loosen the locking ring by anticlockwise rotation to slowly take down the plumb joint. And seal the port with textured paper to prevent the dust from entering the cavity to replace the collimation lens. (Note to the position and thickness of the washer, they will affect the optical path. After disassembly, record the thickness of the washer.)



4.3.2 Disassembly and assembly of focus lens

Tools: 3mm hexagon key wrench, special fixture, dust-free cotton swab and alcohol

※ The disassembly and assembly shall be completed in a clean place. When the lens are dismounted, the dust-free gloves or dust-free fingerstall.

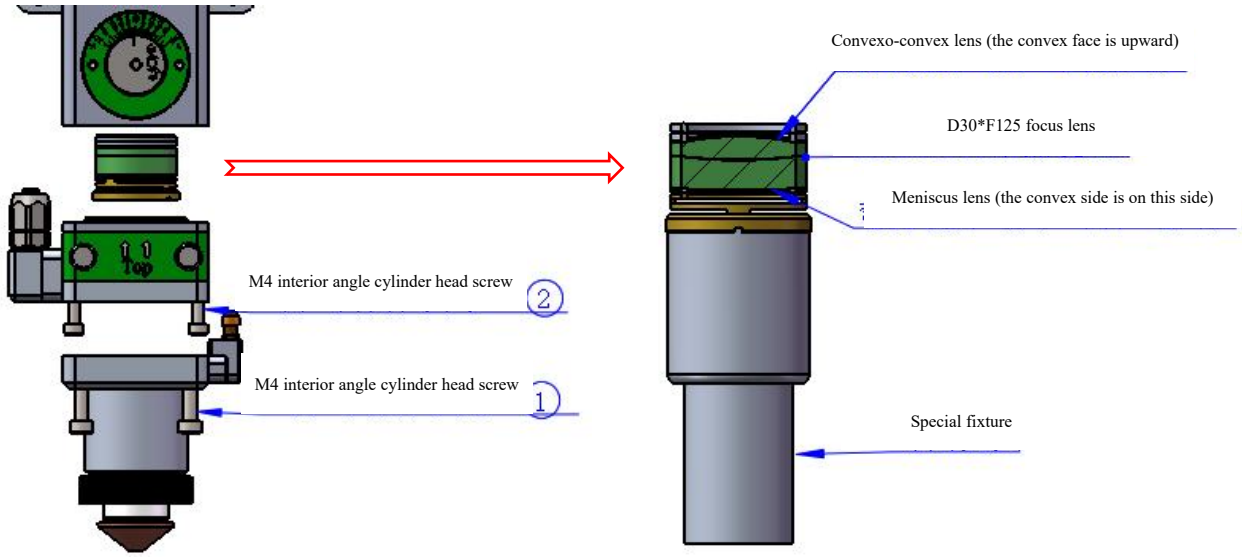
※ Disassembly and assembly steps:

Step I: Clean up all the dust on the surface of the laser head firstly.

Step II: Use a 3mm Allen wrench to loosen the No. 1 and No. 2 M4 hexagon socket head screws in sequence.

Step III: After the component modules are assembled, seal the exposed sealing surface on the cavity with textured paper to prevent dust from entering.

Step IV: Use the special disassembly lens cone fixture to loosen the locking ring by anticlockwise rotation to slowly take down the plumb joint. And seal the port with textured paper to prevent the dust from entering the cavity to replace the focus lens. (Note: as for the gasket placement location and thickness, the gasket will influence the light path. After the dismantling, the gasket thickness shall be recorded.)



4.3.3 Disassembly and assembly of protective glass 01

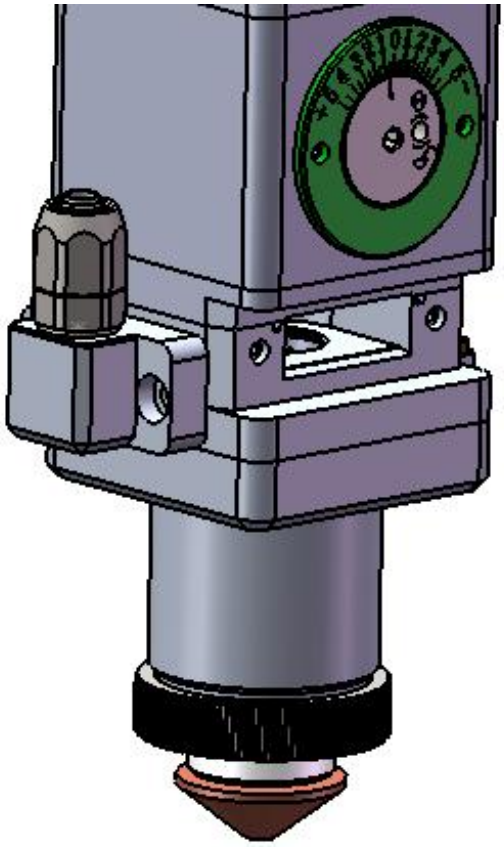
※ The disassembly and assembly shall be completed in a clean place. When the lens are dismounted, the dust-free gloves or dust-free fingerstall.

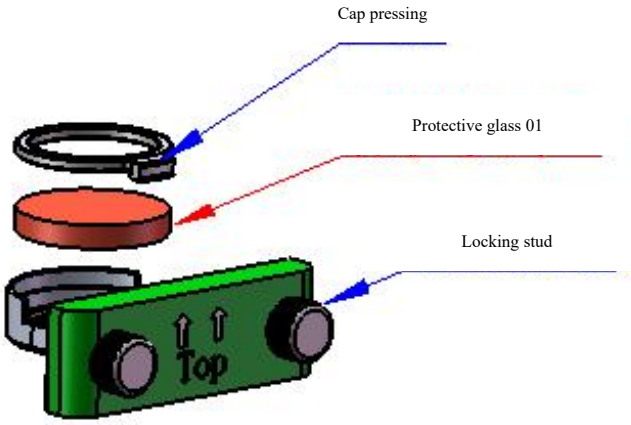
Operation method:

Step I, loosen the locking stud, hold both sides of the green handle and pull out the protective lens horizontally. For example,

during replacement of the protective lens, seal the exposed window on the cavity with masking paper to prevent dust from entering.

Step I: Take out the gland and replace the protective lens.



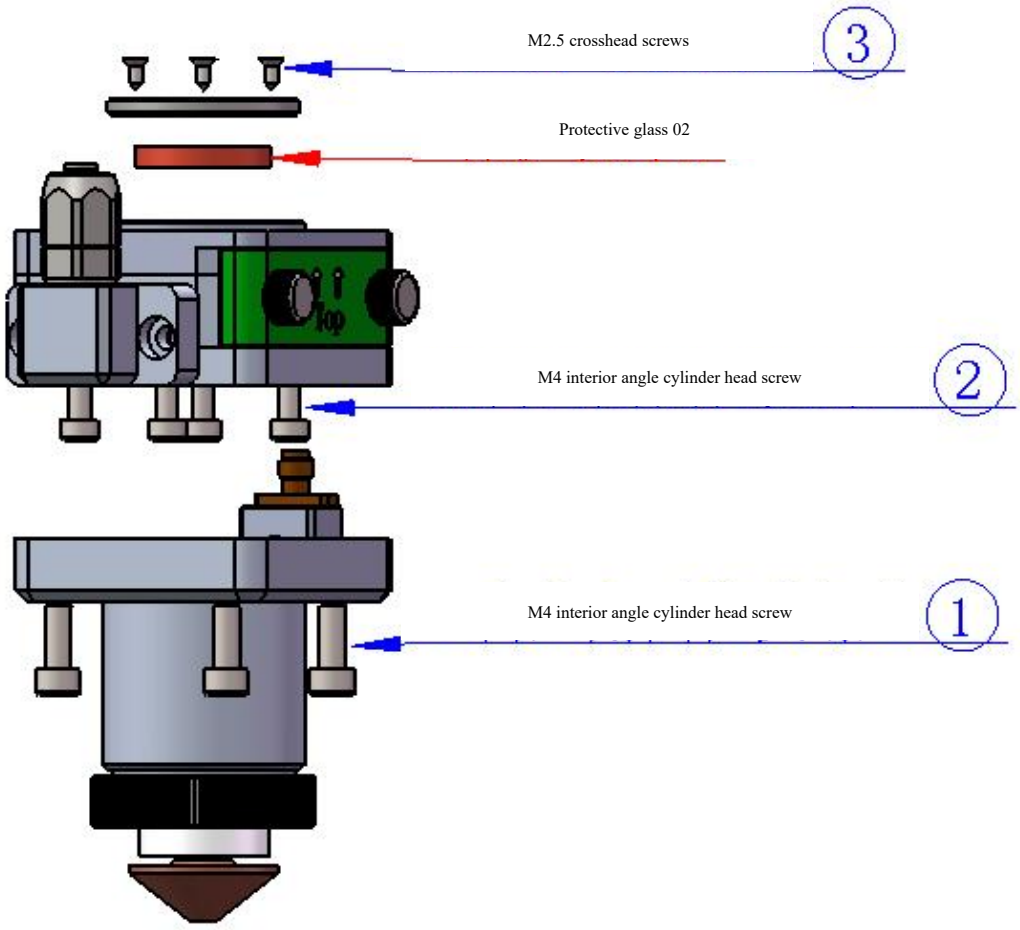


4.3.4 Disassembly and assembly of protective glass 02

※ The disassembly and assembly shall be completed in a clean place. When the lens are dismounted, the dust-free gloves or dust-free fingerstall.

Operation method:

Step 1, loosen the screws as per the sequence numbers of 1, 2 and 3, and take out the protective lens 02 for replacement.

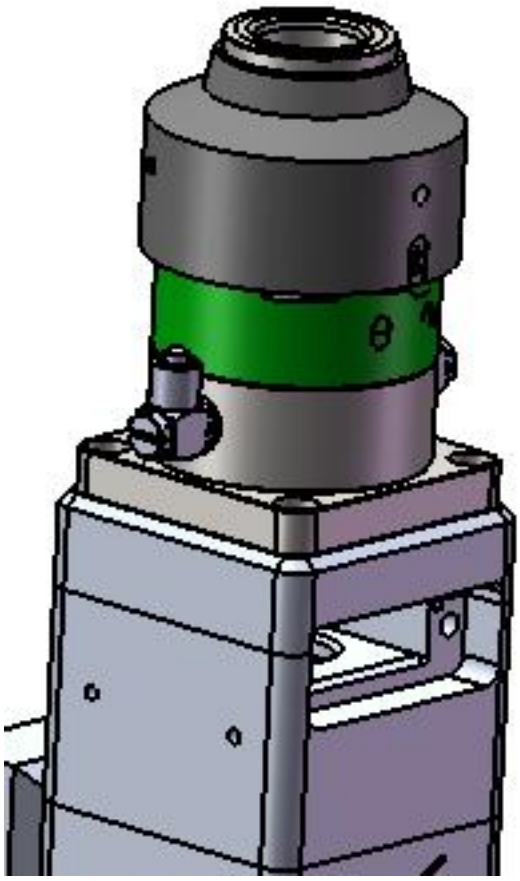


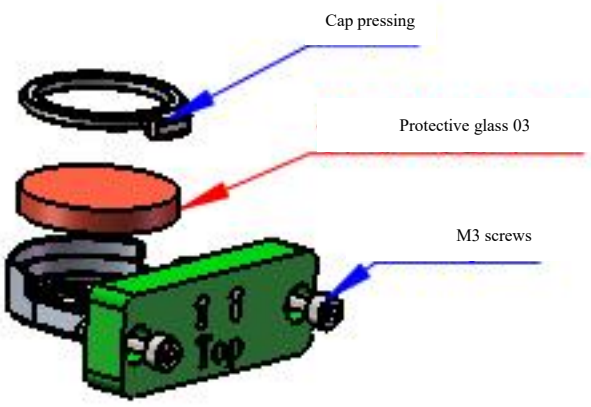
4.3.5 Disassembly and assembly of protective glass 03

※ The disassembly and assembly shall be completed in a clean place. When the lens are dismounted, the dust-free gloves or dust-free fingerstall.

Step I, loosen the M3 screw, hold the stud and pull out the protective lens horizontally. For example, during replacement of the protective lens, seal the exposed window on the cavity with masking paper to prevent dust from entering.

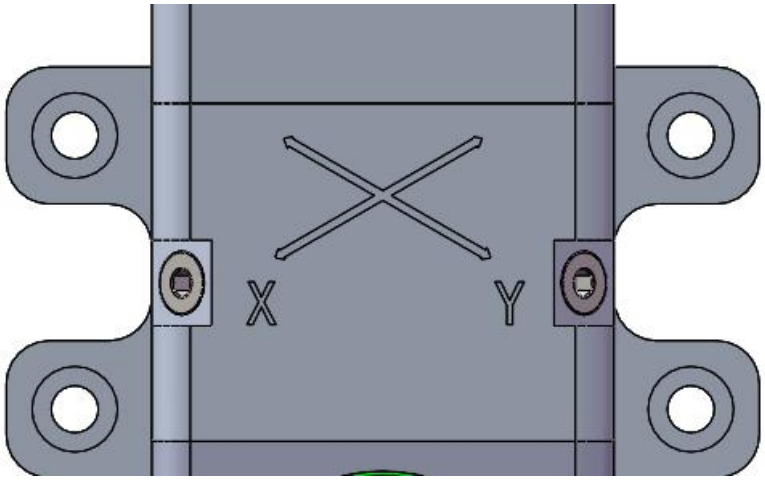
Step II: Take out the gland and replace the protective lens.

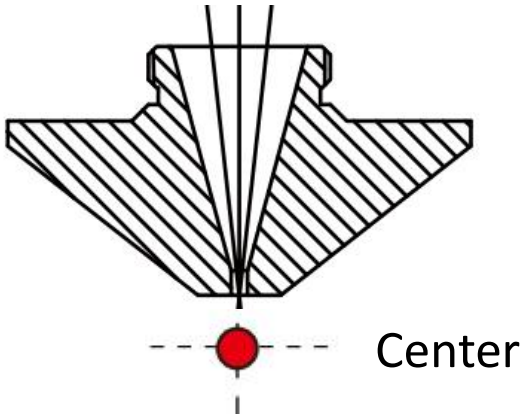




4.3.6 Centering

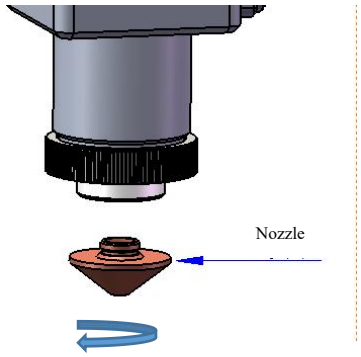
1. Turn the screws on the left and right sides of X and Y to adjust the optical center and the nozzle to be concentric at the center point, so as to avoid light hitting the inner wall of the nozzle.





4.3.7 Replacement of nozzle

1. Turn counterclockwise, loosen the nozzle and replace.



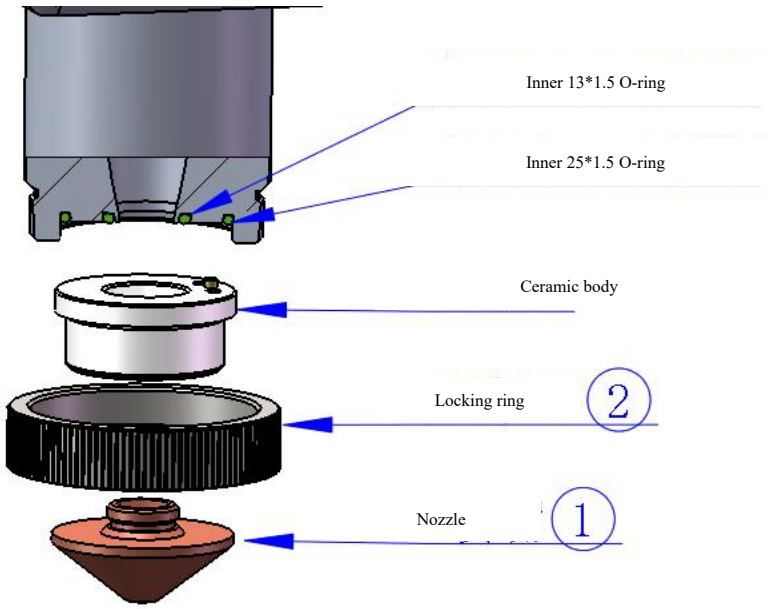
4.3.8 Replacement of ceramic body

Operation method:

Step I: Turn counterclockwise, loosen the nozzle ① and take it out.

Step II:

Step III: Replace the ceramic body and take it out (note that the O-ring will be attached to the structure during taking out the ceramic body, and be careful, not to fall it off, please fix it. Install and align the pinhole direction at 2 places.



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